

IN THE CLAIMS

1. (Withdrawn) An silicon-on-insulator (SOI) substrate, comprising:
a silicon substrate including an active region defined by a field region, the field region including:

a first oxygen-ion-injected isolation region having a first thickness and being formed under said active region, a center of said first region being at a first depth from a top surface of said silicon substrate; and

a second oxygen-ion-injected isolation region having a second thickness greater than said first thickness, said second region being formed at sides of the active region and formed from a top surface of said silicon substrate, a center of the second region being at a second depth from the top surface of said silicon substrate,

wherein the first and second regions surround the active region for device isolation.

2. (Withdrawn) An SOI substrate as claimed in claim 1, wherein a top surface of said active region and the top surface of said second ion injected isolation region are co-planar.

3. (Withdrawn) An SOI substrate as claimed in claim 1, wherein said first depth and said second depth are substantially the same.

4. (Withdrawn) An SOI substrate as claimed in claim 1, wherein said first depth and said second depth are in a range of about 0.07-0.7 μ m.

5. (Withdrawn) An SOI substrate as claimed in claim 1, wherein said second thickness is about 2-3.5 times the first thickness.

6. (Withdrawn) An SOI substrate as claimed in claim 1, wherein said first thickness is about 0.04-0.6 μ m, and said second thickness is about 0.14-1.4 μ m.

7. (Currently amended) A method for manufacturing an SOI substrate, comprising:

forming a sacrificial blocking layer pattern on a silicon substrate, the sacrificial blocking layer pattern defining and covering an active region;

introducing first oxygen ions at a first energy and at a first dose into ~~a surface of said~~ the silicon substrate using ~~said~~ the sacrificial blocking layer pattern as a mask, thereby forming a first oxygen ion injected region in ~~said silicon substrate~~ under the entire active region and forming a first portion of a second injected region adjacent to the first injected region; and

introducing second oxygen ions at a second energy and a second dose into the silicon substrate above the first portion of the second injected region using the sacrificial blocking layer pattern as a mask, thereby forming a second portion of the second oxygen ion injected region in an upper portion of the silicon substrate uncovered by said sacrificial blocking layer pattern, the second energy and the second dose each being less than the first energy and the first dose, respectively, and wherein ~~said~~ the first and second oxygen ion injected regions form form a field region that surrounds and isolates the active region.

8. (Currently amended) A method of manufacturing an SOI substrate as claimed in claim 7, wherein ~~the first oxygen ion injected field~~ region is ~~of a belt shape or of a stepped bell shape~~ substantially dumb-bell shaped.

9. (Currently amended) A method of manufacturing an SOI substrate as claimed in claim 7, wherein ~~said first oxygen ion injecting process is implemented with ionized oxygen, with an~~ the first energy range of is about 60-80KeV and ~~with the first dose of~~ is about 1×10^{18} - 8×10^{18} cm⁻².

10. (Currently amended) A method of manufacturing an SOI substrate as claimed in claim 7, wherein ~~said second oxygen ion injecting process is implemented with ionized oxygen, with an~~ the second energy range of is less than 20KeV and ~~with the second dose of~~ is about 1×10^{18} - 8×10^{18} cm⁻².

11. (Currently amended) A method of manufacturing an SOI substrate as claimed in claim 7, further comprising:

removing said sacrificial blocking layer pattern; and

forming an insulating layer by oxidizing said first and second ~~oxygen ion-injected~~ injected regions through a heat treatment of said substrate.

12. (Original) A method of manufacturing an SOI substrate as claimed in claim 11, wherein said heat treatment is implemented at a temperature range of about 1100-1300°C for about 2-7 hours using an oxidizing ambient.

13. (Original) A method of manufacturing an SOI substrate as claimed in claim 12, wherein said oxidizing atmosphere is a gas mixture including argon and oxygen.

14. (Original) A method of manufacturing an SOI substrate as claimed in claim 7, wherein said sacrificial blocking layer pattern is one selected from the group consisting of a photoresist pattern, a polyimide layer pattern and an SOG (spin-on-glass) layer pattern.

15. (Currently amended) A method of manufacturing an SOI substrate as claimed in claim 7, wherein said sacrificial layer is formed to a predetermined thickness such that oxygen ions pass through said sacrificial blocking layer pattern during the introduction of said first oxygen ions, while oxygen ions ~~could~~ do not pass through said sacrificial blocking layer pattern during the introduction of said second oxygen ions.

16. (Currently amended) A method of manufacturing an SOI substrate as claimed in claim 7, wherein a thickness of said sacrificial blocking layer pattern is approximately 0.05-0.5 μ m.

17. (Original) A method of manufacturing an SOI substrate as claimed in claim 7, wherein an ion injecting angle is 0° during the introduction of said first and second oxygen ions.

18. (Original) A method of manufacturing an SOI substrate as claimed in claim 7, wherein the introduction of the first oxygen ions and the introduction of the second oxygen ions are sequential.

19. (Currently amended) A method of manufacturing an SOI substrate as claimed in claim 7, wherein the ~~first oxygen ion injected~~ the first portion of the second injected region ~~comprises a first portion and a second portion, the first portion formed below the active region and the second portion adjacent the first portion, and wherein the second portion is formed deeper than the first portion below the active~~ injected region.